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(54) Title: WAVEGUIDE SYSTEMS OR STRUCTURES OR PARTS THEREOF, CONTAINING POLYCYANATE COPOLYMERS PREPARED FROM POLYFUNCTIONAL CYANATES AND FLUORINATED MONOCYANATES

(57) Abstract: The present invention is directed to wave guide systems or structures or parts thereof, characterized in that they consist of or comprise a resin composed of at least one polycyanate copolymer, obtainable by copolymerization of at least one specific difunctional cyanate with at least one monocyanate of the formula  $N\equiv C-O-R$ , wherein R is a straight or branched non-aromatic hydrocarbon radical or a non-aromatic hydrocarbon radical comprising a cyclic structure, the radical having the formula  $C(R')_2-CFR''_2$ , wherein each R' is, independently from the other, hydrogen or fluorine or an optionally substituted, preferably fluorinated alkyl or alkenyl group, and each of R'' may independently be defined as R' or may have an aryl structure. The at least one difunctional cyanate is selected from aromatic dicyanates having two aryl rings, connected with each other by a group Z wherein Z is a chemical bond,  $SO_2$ ,  $CF_2$ ,  $CH_2$ ,  $CHF$ ,  $CH(CH_3)$ , isopropylene, hexafluoroisopropylene, n- or iso- $C_1-C_{10}$  alkylene, O,  $NR^9$ ,  $N=N$ ,  $CH=CH$ ,  $C(O)O$ ,  $CH=N$ ,  $CH=N-N=CH$ , alkyl oxyalkylene having 1 to 8 carbon atoms, S,  $Si(CH_3)_2$ , and  $R^9$  is hydrogen or  $C_1-C_{10}$  alkyl. The polycyanate copolymer may further comprise an aromatic monocyanate and/or one or more of brominated cyanates. The polycyanate copolymers are advantageously selected for the preparation of optical waveguide systems or structures or parts thereof because they have low optical losses at 1.3 and 1.55  $\mu m$ .